

Serial No. 09/523,350
January 29, 2004
Reply to the Office Action dated November 17, 2003
Page 6 of 13

REMARKS/ARGUMENTS

Claims 1, 2, 5, 8, 10-13, 15, 16, 18, and 20-22 are pending in this application. By this Amendment, Applicants AMEND claims 1, 5, 8, 10, 11, 15, and 16 and CANCEL claims 6 and 14 and ADD claims 21 and 22.

The Examiner objected to claim 1, 2, 5, 6, 8, 10-16, 18, and 20 for allegedly containing minor informalities.

Applicants have amended the claims to correct the informalities noted by the Examiner. With respect to claim 15, Applicants have not replaced "a vertical stacking direction" with --the vertical stacking direction-- because Applicants have canceled claim 14. Applicants have amended claim 15 to correct the remaining minor informality noted by the Examiner. With respect to claim 16, Applicants respectfully submit that the amendment to claim 11 corrects the minor informality noted by the Examiner.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection to claims 1, 2, 5, 8, 10-13, 15, 16, 18, and 20.

Claims 1, 2, 6, 8, 10-14, 16, 18 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Matsumoto et al. (JP 03-005377) and Yasuda et al. (JP 04-367569). Claims 5 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Matsumoto et al. and Yasuda et al., and further in view of Shirahata et al. (U.S. 6,005,468). Applicants have canceled claims 6 and 14. Applicants respectfully traverse the rejections of claims 1, 2, 8, 10-13, 15, 16, 18, and 20.

Claim 1 has been amended to recite:

**"A method of firing magnetic cores comprising the steps of:
providing a plurality of flattened-ring compact bodies made of a
magnetic material and having flattened through holes;
arranging each of the plurality of flattened-ring compact bodies so
that axes of the through holes are arranged horizontally;
attaching a powder made of an organic material to an outer surface
of the plurality of flattened-ring compact bodies;
attaching the plurality of flattened-ring compact bodies to one**

Serial No. 09/523,350
January 29, 2004
Reply to the Office Action dated November 17, 2003
Page 7 of 13

another so that the axes of the flattened through-holes are vertically arranged;

firing the plurality of flattened-ring compact bodies while the powder is interposed between the adjacent flattened-ring compact bodies such that said powder is vaporized during the firing step; and

separating said plurality of flattened-ring compact bodies from each other." (emphasis added)

Applicants' claim 1 recites a "method of firing magnetic cores," compact bodies "having flattened through holes," and "attaching the plurality of flattened-ring compact bodies to one another so that the axes of the flattened through-holes are vertically arranged." Applicants' claim 11 recites features which are similar to features recited in Applicants' claim 1, including the above emphasized features. With the improved features of claims 1 and 11, Applicants have been able to provide a method of firing magnetic cores in which firing is performed with a high degree of reliability and mass production is allowed (see, for example, the first full paragraph on page 3 of the originally filed Specification).

Applicants agree with the Examiner that AAPA fails to teach or suggest the feature of "attaching the plurality of flattened-ring compact bodies to one another so that the axes of the flattened through-holes are vertically arranged" as recited in Applicants' claim 1 or the feature of "vertically attaching the plurality of thin compact bodies to one another" as recited in Applicants' claim 11. Applicants also agree with the Examiner that AAPA fails to teach or suggest the features of "attaching a powder made of an organic material to an outer surface of the plurality of flattened-ring compact bodies" and "said powder is vaporized during the firing step" as recited in Applicants' claim 1 and the features of "attaching a powder made of an organic powder to an outer surface of the plurality of thin compact bodies" and "said powder is vaporized during the firing step" as recited in Applicants' claim 11. The Examiner has relied upon Matsumoto et al. and Yasuda et al. to allegedly cure these deficiencies.

As admitted by the Examiner, AAPA fails to teach or suggest the features of

Serial No. 09/523,350

January 29, 2004

Reply to the Office Action dated November 17, 2003

Page 8 of 13

"attaching the plurality of flattened-ring compact bodies to one another so that the axes of the flattened through-holes are vertically arranged" as recited in Applicants' claim 1 or the feature of "vertically attaching the plurality of thin compact bodies to one another" as recited in Applicants' claim 11. In fact, the prior art relating to magnetic cores and forming the same is completely devoid of a teaching of attaching a plurality of flattened-ring compact bodies to one another. Since the magnetic core art does not teach that magnetic cores could or should be attached to teach other, there is certainly no teaching or suggestion whatsoever of the vertical attaching or vertical arrangement recited in Applicants' claims.

Despite these clear deficiencies of the magnetic core art, the Examiner seeks to rely on a completely unrelated field of endeavor, in which solid piezoelectric layers are stacked on each other to form a multilayer stacked component, to support his conclusion that the step of attaching, and more specifically, vertically attaching, flattened-ring compact bodies in a method of firing magnetic cores would have been obvious. This is akin to saying because pancakes are stacked on each other, it would have been obvious to stack magnetic cores on each other and fire them in the stacked state. This conclusion is obviously without merit and completely unsupported by the teachings and suggestions of the relevant art.

The Examiner is reminded that "[i]n order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." See In re Oetiker, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992) and MPEP § 2141.01(a). That is, the Examiner must rely upon analogous art to reject Applicants' claims.

The present invention is directed to a method of firing magnetic cores, as recited in the claims. In contrast, Matsumoto et al. is directed to the field of manufacturing piezoelectric ceramic bodies in which a plurality of piezoelectric layers are stacked on each other to form a known stacked piezoelectric component such as a piezoelectric

Serial No. 09/523,350
January 29, 2004
Reply to the Office Action dated November 17, 2003
Page 9 of 13

actuator. As is well known in the piezoelectric component art, as would readily be recognized and admitted by the Examiner, the piezoelectric layers in such a device as taught by Matsumoto could NOT have any holes formed therein and still function. In addition, in the piezoelectric component art, the piezoelectric layers must be stacked and fired in order to function as a multilayer piezoelectric device. This is completely NOT true of magnetic cores as evidenced by the state of the prior art in the magnetic core field where separate individual magnetic cores are fired during manufacturing. Thus, the stacking of piezoelectric layers to form a piezoelectric component has as much to do with the magnetic core art as does stacking multiple pancakes on a plate.

Thus, the present invention and Matsumoto et al. are clearly in different fields of endeavor.

Further, the present invention is directed to efficiently firing multiple magnetic cores by vertically attaching them, and solving a problem of preventing the individual magnetic cores from coming into contact with each other during firing (paragraph bridging pages 2 and 3 of the originally filed Specification). In contrast, Matsumoto et al. is directed to solving the problem of eliminating a degreasing stage in the production process of a multi-layer piezoelectric body (English language abstract). Thus, the present invention and Matsumoto et al. are clearly directed to solving different problems experienced with entirely different devices two completely different fields of endeavor.

Thus, Matsumoto et al. has nothing at all do with the magnetic core art or the present claimed invention. Applicants respectfully submit that Matsumoto et al. is clearly and unequivocally non-analogous art and that the Examiner has improperly relied upon Matsumoto et al. to reject claims 1 and 11.

Moreover, Matsumoto et al. fails to teach or suggest the feature of compact bodies "having flattened through holes" as recited in Applicants' claims 1 and 11. As noted above and well-recognized in the multi-layer piezoelectric component field, the piezoelectric layers of Matsumoto can NOT have any holes formed therein whatsoever, and still be able to function.

Serial No. 09/523,350
January 29, 2004
Reply to the Office Action dated November 17, 2003
Page 10 of 13

Further, Matsumoto et al. teaches in **Fig. 5** that the piezoelectric ceramic bodies are fired when the solid piezoelectric ceramic bodies are stacked in the vertical direction. The Examiner has failed to explain how the required through holes of compact bodies of AAPA would be maintained and not eliminated if vertically stacked and fired as per the multi-layer stacked piezoelectric component manufacturing method of Matsumoto et al. That is, the Examiner has failed to explain how firing the compact bodies of AAPA when the compact bodies are stacked in vertical direction will not cause the through holes of the compact bodies to collapse, thus, eliminating the through holes in the compact bodies pursuant to the Examiner's proposed combination of process steps of Matsumoto et al. and AAPA.

The Examiner is reminded that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) and MPEP § 2143.01.

With respect to the Examiner's reliance upon Yasuda, Applicants have provided an Information Disclosure Statement herewith citing an English language abstract of Yasuda et al. The English language abstract discloses that the inserting sheet is used "in an atmosphere such as a reducing **atmosphere other than the air**" (emphasis added). In contrast, AAPA teaches that the method must be performed in air. Thus, Yasuda clearly teaches away from AAPA. The Examiner has completely failed to explain why an atmosphere other than air should be used in either of the methods disclosed in AAPA or Matsumoto et al. Thus, Applicants respectfully submit that the Examiner has failed to provide motivation for combining Yasuda et al. with AAPA or Matsumoto et al.

Also, in paragraph no. 7 on page 8 of the outstanding Office Action, the Examiner alleged that "where the general conditions of claims are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." Applicants have assumed that the Examiner is alleging that it would have been obvious

Serial No. 09/523,350
January 29, 2004
Reply to the Office Action dated November 17, 2003
Page 11 of 13

to optimize the direction of the axis of the through hole of the magnetic cores.

The Examiner is reminded that “[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.” In re Antonie, 195 USPQ 6 (CCPA 1977) and MPEP §2144.05(II)(B). Thus, Applicants respectfully request that the Examiner provide a reference that teaches that the direction of the axis of the through hole of the magnetic cores was an art recognized result-effective variable at the time of Applicants’ invention.

In addition, in paragraph no. 7 on page 8 of the outstanding Office Action, the Examiner alleged that “[i]n this instance applicant has failed to establish arranging horizontal axes of the through holes of the compact bodies as claimed are critical from the prior art.” However, the Examiner is reminded that there is nothing in the relevant case law that stands for the general proposition that an Applicant for a patent must make a showing of criticality or unexpected results unless the difference between a claimed invention and the prior art is a range or other variable. In re Woodruff, 16 USPQ2d 1934 (Fed. Cir. 1990). Thus, Applicants respectfully submit that they are not required to show criticality of the direction of the axis of the through hole of the magnetic cores.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1 and 11 under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Matsumoto et al. and Yasuda et al.

The Examiner has relied upon Shirahata et al. to allegedly cure various deficiencies in the combination of AAPA, Matsumoto et al., and Yasuda et al. However, Shirahata et al. fails to teach or suggest the feature of a “method of firing magnetic cores” as recited in Applicants’ claims 1 and 11.

Applicants hereby request that the Examiner provide an English language translation of Matsumoto et al. and Yasuda et al. “so that the record is clear as to the

Serial No. 09/523,350
January 29, 2004
Reply to the Office Action dated November 17, 2003
Page 12 of 13

precise facts the examiner is relying upon." MPEP § 706.02, "Reliance upon Abstracts and Foreign Language Documents in Support of a Rejection;" See also Ex parte Jones, 62 USPQ2d 1206, 1208 (Bd. Pat. App. & Inter. 2001).

Accordingly, Applicants respectfully submit that AAPA, Matsumoto et al., Yasuda et al., and Shirahata et al., applied alone or in combination, fail to teach or suggest the unique combination and arrangement of elements recited in claims 1 and 11 of the present application. Claims 1, 2, 5, 8, 10 and 21 depend upon claim 1 and are therefore allowable for at least the reasons that claim 1 is allowable. Claims 12, 13, 15, 16, 18, 20 and 22 depend upon claim 11 and are therefore allowable for at least the reasons that claim 11 is allowable.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

Serial No. 09/523,350
January 29, 2004
Reply to the Office Action dated November 17, 2003
Page 13 of 13

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Date: January 29, 2004


Attnorneys for Applicants

Joseph R. Keating
Registration No. 37,368

Christopher A. Bennett
Registration No. 46,710

KEATING & BENNETT LLP
10400 Eaton Place, Suite 312
Fairfax, VA 22030
Telephone: (703) 385-5200
Facsimile: (703) 385-5080